

cannot fight off the pathogen. Researchers at Harvard University and USDA's Agricultural Research Center are working on characterizing the complex genetic system that allows legumes such as soybeans, garden peas, and beans to help fix nitrogen in the soil. Enhancing the symbiosis between a plant and its neighboring microorganisms could reduce the need for fertilizers.

New techniques in gene mapping are making plant mapping easier. To construct genetic maps of forest trees, North Carolina State University's Forest Biotechnology Research Consortium is using a technique called random amplified polymorphic DNA (RAPD) developed by DuPont. The RAPD technology allows researchers to duplicate very short pieces of DNA from a loblolly pine, then compare genetic variations between these bits and other sections. Once hundreds of these genetic variations are plotted and their associations with other sections of DNA determined, a genetic map emerges that allows scientists to determine where genes fall in relation to markers. Ronald Sederoff, a professor of forestry and genetics, said that only a year ago mapping a loblolly pine would have taken four years and \$1 million. This spring, researchers mapped it using RAPD in 60 days, at a fraction of the cost. Another technique called amplified fragment length polymorphic is also on the horizon, according to Miksche. It's much like RAPD, but even faster and more discriminating.

Efforts to map plant genomes have been aided by the agricultural industry, but their findings are often private, Miksche said. The controversy that has sprung from one of their efforts, the famous "Flavor Saver" tomato, however, portends future public debate over the safety and efficacy of genetically altered food. Miksche said he is ready for "a good public discussion," but hopes that it is "waged on scientific rather than emotional grounds."

A Healthy Peace in the Middle East

More than 50 senior scientists from academic institutions and government agencies from nine Middle East countries (Bahrain, Egypt, Israel, Jordan, Kuwait, Lebanon, Saudi Arabia, the United Arab Emirates, and Yemen) and from the occupied territories on the West Bank and the Gaza Strip, along with U.S. and Canadian scientists, met for the first time to address environmental health risks in the Middle East. The scientists gathered in Cairo September 6-11 to attend the Environmental Health Conference for the Middle East Region. The conference was hosted by Cairo



Middle East meets West. Participants of the conference represented Bahrain, Egypt, Gaza Strip, Israel, Jordan, Kuwait, Saudi Arabia, and the United States.

University and sponsored by the Fogarty International Center of the National Institutes of Health, the International Development Research Centre of Canada, and NIEHS.

The purpose of the conference was to identify and seek possible interventions for environmental health risks that are unique to the individual countries in the Middle East or that present significantly elevated threats to occupational or environmental health. Misuse of pesticides and other agricultural chemicals, disposal of solid and chemical wastes, urban air pollution, water quality, environmental impacts of industrialization, and the adverse effects of wind-blown dusts and intense heat were identified as posing serious public health problems in the region. Several participants noted that infectious diseases associated with poor sanitation, food contamination, and overcrowding remain major causes of morbidity and mortality in many areas of the Middle East.

Scientists from the Middle East expressed concern and frustration about the fact that the dramatic environmental impacts of population changes and agricultural, technological, and industrial advances in the region have been identified and characterized by scientists but are apparently unrecognized by government officials and the general public. In response to this concern, participants proposed the formation of a committee of scientists who will meet regularly to address specific environmental and occupational health risks that exist in the Middle East

and to develop strategies to reduce these risks.

The scientists stressed that the committee members would have the expertise to design programs that protect human health but that would not threaten the processes of economic and industrial development or the social, cultural, and religious values of the nations in the region. Because the committee includes wide regional representation, environmental concerns that affect several countries can be resolved by programs that cross national borders.

The conference took place just as the intention of the Palestinian Liberation Organization and Israel to seek a peace accord was announced. As news of the potential agreement reached Cairo, it gave added impetus to the creation of the regional committee. As one participant pointed out on the closing day of the conference, "We all come from developing countries but we are not from poor countries. We each have an obligation as scientists to convince our governmental leaders that our effort is an important part of the peace process and must be maintained as a regional effort."

Browner and Babbitt Meet the Press

EPA Administrator Carol Browner and Interior Secretary Bruce Babbitt faced tough questions on the Superfund law, the Endangered Species Act, and other issues at a meeting of environmental journalists held October 22-24.

Browner and Babbitt spoke separately on the two laws, both of which are up for reauthorization, at the Third Annual Meeting of the Society of Environmental Journalists held at Duke University. Browner outlined three areas of reform in the Superfund law to be presented to Congress. First, she said, the process of determining which sites get cleaned up and who pays for it needs to be made more fair. Browner emphasized goals to decrease litigation including limits on liability of people who contribute only small amounts to toxic sites and a streamlined settlement process. Second, the cleanup process needs to be made more efficient and consistent. Third, Browner said that more community involvement is needed in the cleanup of hazardous waste sites and in decisions over future use of remediated dump sites. Said Browner, "EPA needs to listen to the community right from the start about how the land should be used in the future. That will help us determine the remedy. Where an industrial plant is going to move in, it may not make sense to clean up every trace of contamination—but if you're planning to build a school or a home or a playground on that site, that's a different story."

Browner detailed her goals to make EPA more responsive to the needs of the public by eliminating gridlock and red tape, emphasizing pollution prevention, increasing community involvement, and outreach and communication to the public. She discussed several major areas of congressional debate in which EPA will play a substantial role in forming policy including food safety, the Clean Water Act, and the Safe Drinking Water Act.

Browner promised the EPA would reform "our antiquated regulatory system" of pesticides by seeking stiffer penalties for pesticide manufacturers who don't cooperate with EPA inquiries. She proposed a "registration sunset" of 15 years during which time the EPA could monitor a chemical's safety and after which manufacturers would have to supply research results to the EPA to maintain registration of their products. "That's putting the burden on the people who have the information to send it to us rather than us having to reinvent the wheel," she said.

Browner said the EPA is seeking to strengthen the two laws specifically concerned with water pollution by focusing on runoff and other nonpoint sources and by building pollution prevention, technological innovation, and community participation into the laws.



Carol Browner—Community involvement is key to good environmental regulation.

In his speech on the renewal of the federal Endangered Species Act, originally passed in 1973, Babbitt focused on opposition to the act by the Wise Use movement and their attempts to codify compensation by the government for environmental regulations that infringe on personal property rights in H.R. 1388, the Just Compensation Act of 1993. Babbitt attacked the act, which would give property owners the right to demand reimbursement of cleanup costs and other environmental measures from the federal government, saying, "The maxim 'make polluters pay' would be replaced by a new legal rule: 'it pays to pollute; the government will reimburse your costs.'"

Babbitt cited examples of the implications of what he deemed "this proposed raid on the public treasury" including a situation in the Kesterson National Wildlife refuge in California in which polluted runoff waters caused massive numbers of ducks and geese to die. Under H.R. 1388, farmers forced to clean up irrigation discharges could demand reimbursement from the Interior Department. In another situation, the National Marine Fisheries Service issued a regulation requiring shrimpers to use a turtle exclusion device to protect endangered Kemp Ridley sea turtles from entanglement and death in their nets. H.R. 1388 would require the government to pay for costs of compliance.

Babbitt compared environmental regulations to planning and zoning laws which sometimes limit the freedoms of individual property owners in the interest of providing benefits to the whole community. "Regulatory actions taken for a valid public purpose have had some consequences that inconvenience people," he said.

Babbitt said that there is no evidence that the habitat conservation provisions of the Endangered Species Act have placed

widespread hardship on landowners. Said Babbitt, "I can't predict the future, but I can say that in the 20 years that the Endangered Species Act has been in place, and despite the fact that more than 800 species throughout the U.S. are now protected by it, not one instance has yet occurred in which a landowner anywhere was so affected by the requirements of the Endangered Species Act that he has taken advantage of the claims court to seek compensation for a governmental taking of his property."

Among the proposals Babbitt offered that would conserve habitats while imposing the least burden on private lands are use of public lands whenever possible as habitat reserves, mitigation fees paid by developers which are used to pay for conservation measures on lands set aside as reserves, and new approaches to land management such as density transfers which allow more dense development in exchange for preserving open space.

At the conference, attended by more than 200 environmental journalists, including 14 minority journalist fellows, Browner commended the press for "helping Americans to see the connections between environmental issues and their own lives."

Percs of the Job

On 22 September 1993, the EPA announced that contamination of indoor air and groundwater by perchloroethylene (perc), the most widely used solvent in the dry-cleaning industry, presents problems that warrant additional federal actions and promulgated a final rule aiming to reduce cancer risks among workers exposed to the chemical.

Perc has been shown to be carcinogenic in laboratory animals and according to the International Agency for Research on Cancer, "is possibly carcinogenic to humans." Perc has a generally noticeable and detectable odor at 50 ppm. The major short- and intermediate-term exposure responses to perc are reported to be central nervous system depression. Irritation of the eyes, nose, and throat are common. Symptoms of exposure include nausea, headache, anorexia, vertigo, dizziness, and euphoria. In some cases death has occurred due to anesthesia and narcosis.

According to Peter Infante, director of the Occupational Safety and Health Administration's Office of Standards and Review, "the final rule standard for occupational exposure to 25 ppm of perc was promulgated by OSHA in 1989 but was vacated by the circuit court on 7 July 1992, largely because the court did not agree to simultaneous standards setting for



Bruce Babbitt—The rights of citizens to a healthy environment must be balanced with the rights of individual property owners.